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	found		calculated for
			$\text{Ca}_3\text{Fe}_2\text{Si}_3\text{O}_{12}$
SiO_2		35.45	35.43
Fe_2O_3	32.33	32.11	31.50
CaO	32.58		33.07

— Foote¹⁵ gives some details concerning a new mineral which he proposes to name Northupite. It was found by Mr. Northup in the “tailings” from a boring made at Borax Lake, Cal. The crystals are regular octahedrons reaching rarely 1 cm. in diameter. The substance seems to be a double chloride and carbonate of sodium and magnesium. Cleavage imperfect, $H = 3.5$ to 4.

PETROGRAPHY.¹

Volcanic Rocks and Tuffs in Prussia.—In the hills east of Ebsdorf, near Marburg, Prussia, are large areas covered by basalt flows, flows of dolerite, and others of rocks intermediate in character between these two, both of which are pre-Tertiary in age, or at any rate are older than the Tertiary beds with which they are associated. The volcanic rocks are cut by dykes of very basic rock resembling limburgite. The little hill west of Wittelsberg, near the northern edge of the basalt area, and the flank of the hill near Kehrenberg, are composed largely of basalt tuff.

The basalt consists of phenocrysts of augite and olivine in a dense felt of augite microlites, biotite and magnetite, in the spaces between which is a colorless glass containing xenomorphic feldspar, leucite and nepheline. Inclusions in the basalt are very common. They comprise besides fragments of foreign rocks, concretions of olivine and of augite. The olivine concretions always contain more or less bronzite, and usually they are surrounded by a violet-brown rim similar to the rims found surrounding the augite phenocrysts in the basalt. Even those concretions that are composed almost exclusively of bronzite are surrounded by rims of this character. The principal component of this rim is a monoclinic augite, so that it appears here that the bronzite, which must have been one of the earliest separations from the magma, was, after its crystallization, changed into augite. Other concretions show the

¹⁵ Am Jour. Sci., L, pp. 480-488, Dec., 1895.

¹ Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

alteration of the bronzite into olivine. By complete fusion one concretion, which is thought by the author to have been a bronzite-augite aggregate, has been changed to a mass of rounded augite and olivine grains imbedded in a glass which locally is replaced by nepheline. The alteration of the bronzite, as indicated by the study of a number of sections, is into olivine, augite, magnetite and glass. Among the rare constituents of the olivine concretions are chrome diopside and picotite. The augite concretions or inclusions, consist almost exclusively of a monoclinic augite with which is usually associated a little olivine. In the interiors of the concretions the augite contains fluid enclosures, but toward their peripheries the enclosures are all of glass. Often between the augite grains are little nests of calcite. One of the inclusions observed by the author is abnormal in that it is composed of a small nucleus of augite surrounded by a zone of brown biotite.

Of the foreign inclusions, the author describes two kinds—the calcareous and the granitic. The basalt in the neighborhood of limestone inclusions loses its biotite and magnetite. Nearer the inclusions the augite microlites become light colored and magnetite grains are again developed. At the boundary of the limestone fragment is a rim of large augites, whose ends are directed toward the center of the inclusion. This latter itself is composed of the remnants of calcite grains imbedded in a brown glass, in which are also well formed crystals of a scapolite. The sandstone inclusions have been changed to a mass of quartz grains lying in a brown glass, the whole being surrounded by the usual zone of augite microlites. The granite inclusions first lose their mica. The old feldspar has given rise to newly developed feldspar.

The dolerite seem to occur as a number of small flows that have run together. It presents no special peculiarities. The dyke basalt cutting the tuffs and dolerites sometimes contains well defined crystals of olivine, which occasionally occur as interpenetration twins.

Igneous Rocks of British Columbia.—The petrographical characters of the principal rocks occurring within the area of the Kamloops Map-sheet of British Columbia are described by Ferrier.² These rocks embrace feldspathic actinolite schists, diabase porphyrites, harzburgite, amphibolites, diabase tuffs, cherts, gabbros, orthophyres, augite-porphyrates, porphyrites, basalts, pecrite-porphyrates, andesites, trachytes, dacites, diorites, granites, syenites, quartz-porphyrates, alnoite and a series of much altered rocks. The descriptions are all brief.

² Annual Rep. Geol. Surv. of Canada, Vol. VII, Pt. B., p. 349,

Chalcedony Concretions in Obsidians from Colorado.—Patton³ describes the occurrence of large opal and chalcedony concretions or geode-like bodies in beds of a decomposed obsidian on Ute Creek in Hinsdale Co., Colorado. The concretions are most common in the upper scoriaceous portions of the flows. Similar concretions were also found in a rhyolite at Specimen Mountain. The concretions are composed of radial fibres of chalcedony. The flowage lines that are common to the rock pass uninterruptedly through them, and in them are trichites exactly like those in the body of the rock. The concretions are regarded as secondary in origin—and as due to the percolation of silica-bearing waters through the rock. The same author publishes some photographs of erosion forms produced by the weathering of the volcanic conglomerates in the San Juan Mountains.

Basic Dykes near Lake Memphremagog.—According to Marsters⁴ the Chazy limestones of Lake Memphremagog are cut by granite, olivine, diabase and lamprophyre dykes. The latter comprise dark rocks containing phenocrysts of augite, hornblende or olivine. The olivine, when it occurs, is always situated in the central portions of the dykes. Sometimes its crystals are one and half inches in diameter. Petrographically these rocks are augite camptonites, fourchites and monchiquites. The augite camptonite contains both augite and hornblende in two generations and in varying quantities. Only two fourchite dykes were observed. Their material presents no unusual features. The paper is interesting as bringing to our knowledge another area in which these peculiar and interesting dyke rocks occur.

The Origin of the Maryland Granites.—The last article written by the late Dr. Williams⁵ is an introduction to Keyes article on Maryland granites. In this paper the author explains the criteria by which ancient plutonic rocks may be recognized in highly metamorphosed terranes, and applies the principles thus established to prove the eruptive nature of many of the Maryland granites. The pegmatites of the Piedmont plateau were tested by the same criteria, with the result that these too are pronounced to be eruptive. Many handsome plates embellish this portion of the paper. In the main portion of the article Keyes describes the petrographical features of the different types of granite, giving special attention to the original allanite and epidote found in them. There is little that is new in the paper, most of its

³ Proc. Colo. Scient. Soc., Nov. 4, 1895.

⁴ Amer. Geol., July, 1895, p. 25.

⁵ 15th Ann. Rep. U. S. G. S., 1895, p. 653.

essential points having already been discussed by Hobbs, Grimsley and others.

Petrographical Notes.—The rocks of the Laurentian area to the north and west of St. Jerome, Quebec, are briefly referred to by Adams⁶ as gneisses, anorthosites, amphibolites, limestones, quartzites, etc. Some of the gneisses are eruptive and others are probably sedimentary.

Miller and Brock⁷ have found in Frontenac, Leeds and Lanark Counties, Ontario, granites, gabbros, scapolite and pyroxene rocks of Laurentian age cut by dykes of quartz gabbro containing phenocrysts of pyroxene and plagioclase.

Keyes⁸ declares that the granites and porphyries occurring in the eastern portion of the Ozarks, in Missouri, "are very closely related genetically, and are to be regarded as facies of the same magma," the porphyry being the upper and surface facies of the granite.

GEOLOGY AND PALEONTOLOGY.

Canadian Paleontology.—In addition to the vertebrates (reptilia and batrachia) and land snails discovered by Sir Wm. Dawson in the interior of erect trees in the coal formations of Nova Scotia, and described by him in various scientific publications, fragments of arthropods have been found in the material collected. These were submitted for examination to Mr. Samuel Scudder who published a preliminary report in 1882, and now, after completing his study, gives these additional facts. A few species of Myriapods show traces of the bases of spines; the ventral plates in *Archiulus* are very broad; two new species of this genus are recognized; two species of *Mazonia* are indicated, one of which (*M. acadica*) confirms the separation of this genus from *Eoscorpius*; a faceted eye taken from a reptilian coprolite shows the presence of a true insect, probably a cockroach.

A report upon the Cenozoic Hemiptera of British Columbia, by the same author, comprises descriptions of nineteen species. Mr. Scudder calls attention to the great variety among these insects. Among the Homoptera, every specimen must be referred to a distinct species, and

⁶ Ann. Rep. Geol. Surv. of Can., Vol. VII, J., p. 93.

⁷ Can. Record of Science, Oct., 1895.

⁸ Bull. Geol. Soc. Amer., Vol. 7, p. 363.